

# Urjoshi Sinha

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214 Atanasoff Hall, Osborn Dr, Ames-IA 50010

## EDUCATION

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### Iowa State University (ISU)

*Ph.D. in Computer Science (GPA: 3.89/4)*

Ames, IA, USA

*Aug. 2018 – Present*

### West Bengal University of Technology (WBUT)

*Bachelor of Technology in Computer Science (CGPA: 8.55/10 (absolute GPA system))*

Kolkata, India

*Aug. 2010 – May 2014*

## RESEARCH INTERESTS

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Automated Software Testing, Optimization, Configurability, Machine Learning, Genetic Algorithms, Bio-informatics, Translation Management tools.

## EXPERIENCE

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### Research Assistant

*Iowa State University, Computer Science Department*

May – July 2019, May 2020 – Present

*Ames, IA, USA*

- **Advisor:** Dr Myra Cohen
- Laboratory for Variability-Aware Assurance and Testing of Organic Programs (**LaVA-OPs**)
- Leveraging evolutionary algorithms for automated software testing by exploring and optimizing configuration space of highly customizable tools, such as bio-informatics software and computer aided translation management tools.
- Testing effects of varying functional parameters on a system's outputs.

### Teaching Assistant

*Iowa State University, Computer Science Department*

Aug 2018 – Apr 2019, Aug 2019 – Apr 2020

*Ames, IA, USA*

- **Supervisor:** Dr Shu-Hui Chang **Course:** Introduction to Spreadsheets and Databases
- Instructed and evaluated undergraduate students in their semester long assignments, projects & course curriculum.

### Industry Experience: Systems Engineer – SQL Server Database Admin.

*Tata Consultancy Services Ltd.(TCSL)*

Sep 2014 – Jul 2018

*Kolkata, India*

- Performed MS-SQL Server & database performance tuning, installation, migration & risk mitigation of SQL instances. Verified stability, inter-operability, portability and scalability of the system's architecture (platform Windows Server 2008 R2/2012) & designed specification documents. Tuned T-SQL scripts to enhance query behavior; automated manual monitoring activities.

### Internship

*Simoco Educational Development & Application Initiative*

Jun – Jul, 2013

*Kolkata, India*

- **Ambulance Tracking & Management System:** Implemented a web-based solution using Java (J2EE, JSP, Servlets) and an Oracle database. Employing the SIMOCO Tracer Machine to track an ambulance, the project aimed to automate the calculation of distance of an ambulance from its current location to the nearest hospital, thus facilitating decision making by selecting the most reachable vehicle for a caller. It simultaneously processed charges for the services.

## PUBLICATIONS

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- *Using a Genetic Algorithm to Optimize Configurations in a Data-driven Application*, Urjoshi Sinha, Mikaela Cashman, Myra B. Cohen. Accepted for publication in the research track at the 12th Symposium on Search-Based Software Engineering: *SSBSE-2020*. [Access Pre-print]. Oct, 2019
- *ICON: A Framework for Interpretable Configuration Options*, Mikaela Cashman, Urjoshi Sinha, Myra B. Cohen (Under submission).

## AWARDS

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- **ISU Innovation Contest:** First prize in 'Global Impact Category' with a cash award of \$1500. Competed in a team of three & pitched the idea of fabricating and strategically marketing an unique point of care disease detection device to assist in pediatric care of children in economically deprived sections of South-East Asia. Nov, 2019
- **TED Translator Travel Award for TED 2019:** Selected as part of a 12-member translator delegate from +36K translators internationally for excellent services as a TED translator. Apr, 2019
- **Service and Commitment Award** by TCSL for dedication in services for +3yrs. Sep, 2017
- **'On the Spot Award'** in TCSL for efficiently performing my team's Delivery Center MySQL Database Migration. Feb, 2016
- **Academic excellence award** in high-school for outstanding performance in Mathematics and English(> 90% marks). Class rank: 2nd amongst 100+ students. Apr, 2010

## CONFERENCES & WORKSHOPS

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- The 12th Symposium on Search-Based Software Engineering (**SSBSE-2020**). Research presentation: Using a Genetic Algorithm to Optimize Configurations in a Data-driven Application. Oct, 2020
- Selected for **CRA -W grad cohort** workshop. To present: Poster on 'Configuration testing of bio-informatics tools'. Apr, 2020 (Now Apr, 2021)
- **TED 2019, Vancouver**. Presented: Ideas on enhancing existing translation technicalities in the TED-community. Apr, 2019
- **Mid-West Big Data Summer School** at ISU. May, 2019

## COURSEWORK

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Theory of Computation, Advanced Design & Analysis of Algorithms, Advanced Topics in Software Engineering, Software Requirements Engineering, Smart Home Gerontech, Artificial Intelligence, Machine Learning, Deep Machine Learning, Information Warfare, Research Colloquia, Advanced Topics in Database Systems.

## SKILLS

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- **Languages:** C, JAVA, Python, R, SQL, HTML, CSS, JavaScript.
- **Libraries:** Keras, Numpy, Pandas, Jupyter, Tensorflow.
- **Databases:** Microsoft SQL Server 2008 R2/2012, MySQL, Sqlite3, PL/SQLDeveloper.
- **Others:** Git, Blast, MS-Office, Eclipse, R Studio, Informatica 9.1.0, Shell Scripting, Computer Aided Language(CAT) Tools.

## ACADEMIC & PERSONAL PROJECTS

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- **TED Open-Source Translation Project**(Personal Project): Volunteering since **Nov, 2016**, by transcribing TED & TEDx's impactful talks from English to Bengali employing technical translation aids. Also, involved in informally testing the transcribing platform Amara for observable bugs, end-user experience, syncing issues and compatibility. **Software:** India Typing language tools, OmegaT. **Platform:** Amara. **Translator Profile:** <https://www.ted.com/profiles/6713866/translator>
- **Implementing a Deep-Reinforcement Learning Algorithm using Double-Q learning for Acorobot-V1: (Dec, 2019)** Reinforcement Learning agents are very effective solutions for designing controllers for complex non-linear systems. In this project, a Double-Deep Q Network is designed to train an reinforcement learning agent for the Open-AI gym Acorobot-V1 environment to achieve the desired goal of reaching terminal state in minimum time. **Tool:** Keras back-end, **Language:** Python
- **Implementing Genetic Algorithm to Identify the Best Configuration Set in Bio-informatics Software (Apr, 2019):** Bio-informatics tools are a class of highly configurable software which provide users with a wide array of customizable choices. This project deployed genetic algorithm to provide an optimized configuration choice to users of Blastn for obtaining efficient nucleotide-sequence matching results. **Tool:** Blastn command line version, **Language:** Java
- **Hurricane Path Prediction using HURDAT Dataset (Dec, 2018):** The HURDAT dataset, provided by the National Oceanic and Atmospheric Administration (NOAA) was exploited and supervised learning models were used. Subsequently, a comparison of the accuracy of the results predicted were discussed. **Tool:** Python
- **Optimal Path Traversal (Jan, 2014):** Dijkstra's algorithm served as the foundation to compute the minimum cost route between two nodes in a static, stochastic traffic network. Distance between two points was determined by the Haversine formula, taking geographical coordinates as user inputs, via the interactive interface and stored in a repository. The program built using Java, took into consideration the free flow, stopping and acceleration/deceleration time for the final calculation. **Language:** Java

## EXTRA-CURRICULAR

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- *TED Translator* for the **TED Talks** online, translating content from English to Bengali. Nov, 2016 - Current
- *Faculty Senator* for the **Computer Science Graduate Student Organization (CS-GSO)** at ISU. Jun 2019 – Aug 2020
- *Graduate & Professional Student Senate (GPSS)* member in the the **Professional Advancement Grants Committee (PAG)** at ISU. Sep 2019 – Aug 2020
- *Graduate & Professional Student Senate (GPSS)* representative in the **University Committee on Diversity** at ISU. Sep 2019 – Aug 2020